CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF PESTICIDE REGULATION
MEDICAL TOXICOLOGY BRANCH

SUMMARY OF TOXICOLOGY DATA
CHLORPROPHAM

Chemical Code # 141, Tolerance # 181
SB 950 # 175
7/28/86
Revised date: 6/17/03

I. DATA GAP STATUS

Chronic toxicity, rat:	No data gap, possible adverse effect
Chronic toxicity, dog:	No data gap, possible adverse effect
Oncogenicity, rat:	No data gap, possible adverse effect
Oncogenicity, mouse:	No data gap, possible adverse effect (not oncogenicity)
Reproduction, rat:	No data gap, no adverse effect
Teratology, rat:	No data gap, no adverse effect
Teratology, rabbit:	No data gap, no adverse effect
Gene mutation:	No data gap, possible adverse effect
Chromosome effects:	No data gap, no adverse effect
DNA damage:	No data gap, possible adverse effect
Neurotoxicity:	Not required at this time.

Toxicology one-liners are attached.

All record numbers for the above study types through 132117 (Document No. 181-036) were examined. This includes all relevant studies indexed by DPR as of 6/11/03.

In the 1-liners below:
** indicates an acceptable study.
Bold face indicates a possible adverse effect.

File name: t20030617.wpd
Revised by Aldous, 6/17/03

NOTE: U. S. EPA has produced a Reregistration Eligibility Decision (RED) for chlorpropham (Oct. 1996), as well as an FQPA Tolerance Reassessment Progress and Interim Risk Management Decision Document (TRED) (Approved July 19, 2002).

II. TOXICOLOGY ONE-LINERS AND CONCLUSIONS

These pages contain summaries only. Individual worksheets may identify additional effects.

COMBINED, RAT

****181-035 132116** Botta, J. A., "24 Month combined oncogenicity/toxicity evaluation of chlorpropham in rats," T. P. S., Inc., 4/22/93. T. P. S. Study No. 393L-103-055-89. Sprague-Dawley were dosed via diet with chlorpropham, 96.2% purity, at levels adjusted for purity and food consumption patterns to achieve 0, 30, 100, 500, or 1000 mg/kg/day. Fifty/sex/group were designated for the lifetime study [104 wk (M) and 102 wk (F)]. An additional 10/sex/group were scheduled for 1-yr interim sacrifice, with full evaluation. NOEL in females was below 30 mg/kg/day, based on splenic hemosiderosis. NOEL in males was 30 mg/kg/day, based on depressed hemoglobin and RBC count and associated splenic hemosiderosis and congestion. These signs plus reduced hematocrit were observed in females at 100 mg/kg/day and above. Cholesterol was increased at 100 mg/kg/day and above in males at weeks 53 and 78. Reticulocyte counts were consistently elevated in M and F at 500 and 1000 mg/kg/day, probably compensatory to blood cell toxicity. Liver responses to RBC toxicity at 500 and 1000 mg/kg/day in M and F included pigmented Kupffer cells and greatly increased extramedullary hematopoiesis. Kidneys were also pigmented in convoluted tubular epithelium at these doses (M & F), along with mineralized deposits (M), and cortical tubular cyst formation (F), with significant responses in both sexes for all findings at 1000 mg/kg/day. Urinary bilirubin was evident occasionally at 500 mg/kg/day and quite frequently at 1000 mg/kg/day; probably associated with kidney pathology. Appearance of "dark yellow" urine followed a similar pattern. Testicular interstitial cell tumors were significantly elevated at 1000 mg/kg/day (incidences of 1, 4, 2, 4, and 9 in controls through increasing dose groups). There was no predisposing associated histopathology. Lenticular degeneration was increased in high dose males only (incidences of 0, 1, 0, 1, and 5 in controls through increasing dose groups), consistent with the ophthalmological evaluation. Weights of target organs were frequently elevated. Absolute and relative spleen weights at 500 and 1000 mg/kg/day were significantly elevated (usually > 2-fold) in both sexes at interim and terminal sacrifices. Liver relative weights were significantly elevated in M and F at 500 and 1000 mg/kg/day, but absolute liver weight increases were limited to 1000 mg/kg/day terminal sacrifice males. Kidney weights often varied without dose-response, but relative increases in 1000 mg/kg/day were usually significantly elevated, and plausibly treatment-related. Testicular relative weights were elevated at 1 yr and termination at 1000 mg/kg/day. Thyroid absolute weights were somewhat elevated in 500 and 1000 mg/kg/day interim sacrifice females. There were no associated changes in circulating T4 levels (TSH was not measured). Body weight decrements at 1000 mg/kg/day demonstrated excessive toxicity, which is relevant for interpreting high dose findings. For example, at week 76, when survival was high in all groups, high dose M and F weighed 20% and 16% less than controls, whereas decrements at 500 mg/kg/day were 12% and 6%, respectively. Review notes a

structural relationship of chlorpropham with linuron, both of which show blood cell destruction, testicular interstitial cell tumors, and lenticular degradation. **Acceptable**. Blood toxicity at low doses, and interstitial cell tumors (only above the MTD) are considered **"possible adverse effects."** Aldous, 6/17/03.

CHRONIC TOXICITY, RAT

See "Combined, Rat" above.

CHRONIC TOXICITY, DOG

****181-032 116175** Wedig, J. H., "One year chronic study of chlorpropham in dogs," T. P. S., Inc., 1/20/92. T. P. S. Study No. 393J-502-640-89. Four beagles/sex/group were dosed in diet (*ad libitum*) with chlorpropham (purity 96.2%) for 60 weeks. Target doses (adjusting for purity) were 0, 5, 50, 350, and 500 mg/kg/day. Estimated achieved levels were 5.5, 51, 352, and 465 mg/kg/day for treated males, and 5.0, 52, 365, and 448 mg/kg/day for females. In addition to standard chronic study parameters, thyroid functional studies were conducted: dogs were bled just prior to TSH treatment for analyses of T3 and T4. Four hours after TSH stimulation, dogs were sampled for T4. NOEL = 5 mg/kg/day, based on thyroid effects. Thyroid absolute weights were significantly elevated in both sexes at 50 mg/kg/day and above. T4 levels after TSH stimulation were typically reduced at these dose levels in both sexes compared to controls (usually not significant, but consistent enough to attribute to treatment). Thyroid follicular activity based on histopathology was increased above control levels at these dose levels (irregularly shaped follicles, variable thickening of follicular epithelium, clear to pale staining colloid within follicles). Other findings were limited to 350 and 500 mg/kg/day. These included severe but transitory (dose-related) initial food consumption and body weight decrements; general reductions in RBC counts, Hb, and HCT and corresponding substantial increases in platelet counts throughout the study; consistent and substantial increases in serum cholesterol and a modest general decrease of T3 in both sexes; a general increase in urinary bilirubin in males; and elevated liver weights. Increased thyroid activity with impaired effectiveness is a possible adverse effect. The study is acceptable, with deficiencies noted in this review. Aldous, 5/28/03.

181-001 038804 (previously given as 919925 or 919925-2). Larson, P. S., E. M. Crawford, R. Blackwell Smith, Jr., G. R. Hennigar, H. B. Haag, and J. K. Finnegan, "Chronic toxicologic studies on isopropyl N-(3-chlorophenyl) carbamate (CIPC)." *Toxicol. Appl. Pharmacol.* **2**, 659-673 (1960). Medical College of Virginia, Richmond and SUNY, Brooklyn. Chlorpropham (50% formulation) at concentrations of 0, 0.02, 0.2, and 2 % in diet. (1-yr beagle study, and 2-yr rat chronic study). Apparent NOEL = 0.2% (2000 ppm) (findings including body weight decrements and increased liver and spleen organ to body weight ratios at 20000 ppm - all findings in dogs and rats). Unacceptable. Not upgradeable [too few animals at start (2 dogs/sex/group: 25 rats/sex/group); too few tissues examined; no individual data, etc.]. No adverse effect indicated (insufficient information for assessment). J. Wong, 5/30/85. No computer copy of review.

ONCOGENICITY, RAT

See "Combined, Rat" above.

ONCOGENICITY, MOUSE

****181-036 132117** Botta, J. A., "18 Month oncogenicity evaluation of chlorpropham in the mouse," T. P. S., Inc., 10/21/92. Laboratory Project ID: 393K-002-050-89. Fifty CD-1® mice per group were dosed in diet with chlorpropham (96.2% purity) for 18 months at 0, 100, 500, or 1000 mg/kg/day in an oncogenicity study, including hematology and ophthalmology. An additional 10/sex/group were sacrificed at 1 year, with similar evaluations. Diets were offered *ad libitum* and adjusted at least bi-weekly to achieve the intended dosages, accounting for purity. Mortality was significantly elevated in 1000 mg/kg/day males, with significantly elevated amyloidosis as the leading cause of death. All other key findings related to increased blood cell destruction and turnover (**possible adverse effects**). NOEL = 100 mg/kg/day. Clinical signs of "eyes, dark" and "blue extremities" were observed in all high dose mice from weeks 3 or 4 until termination. Incidences of both findings were also significantly elevated to a lesser degree in 500 mg/kg/day mice (M and F), with first onset at 34 weeks. These signs indicated functional changes in hemoglobin. There was physiological compensation to blood toxicity. RBC counts, Hb, and HCT values were unaltered. Derived RBC parameters (MCH, MCHC) were often slightly but significantly elevated at interim or term sacrifice in 1000 mg/kg/day M and F. Reticulocyte counts were generally elevated at 1000 mg/kg/day, as also in 500 mg/kg/day males at interim sacrifice. Liver and spleen weights were generally elevated (usually significantly) at 1000 mg/kg/day. There were strong, consistent, and dose-related elevations in splenic hemosiderosis at 500 to 1000 mg/kg/day in both sexes. Liver hematopoiesis was commonly elevated at 1000 mg/kg/day. There was no neoplasia effect. **Acceptable** with noted deficiencies, unrelated to the major findings. Aldous, 5/16/03.

REPRODUCTION, RAT

******181-018, -019, and -020 036944 036945 and 036946 (re-examined with Addendum: 181-033 116451) Schroeder, R. E., "A two generation reproduction study in rats with CIPC," Bio/dynamics Inc., Project No. 81-2573. Original report dated July 5, 1983. Addendum dated 7/27/92. Fifteen male and 30 female CD® rats per sex per group were dosed continuously in diet with chlorpropham (CIPC tech., 98.8% purity) at 1000, 3000, or 10000 ppm. Pre-mating periods were at least 100 days for F0 and 120 days for F1 rats. Estimated F0 exposures of treated rats during pre-mating were 72, 219, and 723 mg/kg/day (M) and 86, 261, and 848 mg/kg/day (F). F1 pre-mating exposures were similar. This study design included the essential aspects of modern reproduction studies. Parental NOEL = 1000 ppm, based on F1 pre-mating phase body weight decrements and on indicators of RBC toxicity (brown Kupffer cells, brown pigment in kidney tubular epithelium, hypercellular bone marrow). Reproductive parameters were unaffected. Pup growth NOEL = 3000 ppm (reduced pup weights at day 21 in both generations). The 1986 review deemed report as incomplete due to lack of individual parental clinical observations data, which were supplied in report 181-033 116451. Study is acceptable as amended, with no adverse effects. Minor deficiencies in design and conduct are noted in the review. Aldous, 1/6/86, updated with all essential features of the original review by Aldous on

6/2/03.

181-0007 000735 Brief summary of Record No. 036944, above. No detailed worksheet.

TERATOLOGY, RAT

**181-024 036950 [with addendum: 181-033 116452] Rodwell, D. E. (Study Director) "A teratology study in rats with CIPC," WIL Research Labs, Inc. (animal study): PPG Industries (lab analysis in addendum). Project #: WIL-81107. Completion dates:12/4/81 (original report) 7/27/92 (supplement). Groups of 25 Sprague-Dawley COBS CD rats were dosed on gestation days 6-19 with 0, 100, 350, or 1000 mg/kg/day CIPC tech. [chlorpropham, Lot No. 237-2778, stated in a contemporary reproduction study (181-018 036944) to be 98.8% purity]. Maternal toxicity NOEL = 100 mg/kg/day (red staining around nose, eyes, and mouth; urogenital staining; excess salivation). Developmental toxicity NOEL = 1000 mg/kg/day (no response at highest dose tested). The original CDFA data review stated that report was unacceptable, but upgradeable on receipt of stability data for corn oil dosing solutions. Record No. 036944 shows stability in corn oil for at least 16 days. Report is now acceptable, with no adverse effects. Shimer and Aldous, Jan. 8, 1986; re-examined by Aldous on June 2, 2003.

181-0007 000737 Brief summary of Record No. 036950, above. No detailed worksheet.

TERATOLOGY, RABBIT

**181-025 036951 James, P. (Study Director) "A study of the effect of CIPC on pregnancy of the rabbit," Huntingdon Research Centre, 8 March 1983. Laboratory Study # PPG 5&7/8328. Sixteen to 19 NZW does/group were dosed by gavage with 0, 125, 250, or 500 mg/kg/day CIPC (chlorpropham, 98.5% purity) in 1% methylcellulose suspension during gestation days 6-18 of a standard teratology study. A pilot study led to 6/6 does killed *in extremis* at 800 mg/kg/day, justifying the dose selection of the primary study. Maternal toxicity NOEL = 125 mg/kg/day (dose-related increased incidences of "cold ears" at 250 and 500 mg/kg/day: this was also dose-related at 200 mg/kg/day and above in the pilot study). High dose does had a minor body weight decrement of about 100 g during the treatment period. Two high dose does had abortions, whereas no abortions were observed in other groups. There was a statistically significantly increase of combined early and late fetal deaths at 500 mg/kg/day. Two high dose litters (a total of 3 fetuses) had scoliosis, vs. none in other groups (not statistically significant, but plausibly treatment-related. These data support a developmental toxicity NOEL of 250 mg/kg/day. CDFA and DPR reviewers have evaluated scoliosis in particular, and have determined that this should not be designated as an "adverse" effect. Study is acceptable, with some noted deficiencies. No adverse effects. J. Wong of CDFA reviewed an exact duplicate of this record in 5/30/85 as Document No. 181-007, Record No. 000736. Report was later reviewed by Shimer and Aldous 1/27/86. On 5/8/86 a peer-review evaluation was completed by Aldous and Parker. A new worksheet by Aldous on 6/17/03 contains all key findings of the study.

GENOTOXICITY, GENERAL

181-022, and -023, 036948 and 036949. Two volume report of an international study to evaluate the mutagenicity of a series of compounds in different tests and laboratories using a common source of the 42 chemicals. Data are reported in Progress in Mutation Research, Vols. I and II, corresponding to DPR Document Nos. 181-022, and -023, respectively. This series is entitled: "Evaluation of short-term tests for carcinogens," (Report of the International Collaborative Program). Page 6 of Report 1 suggests that these were published about December, 1979. Volume 22 contains the background summaries. Volume 23 provides the individual reports. Chlorpropham [chloropropham, isopropyl-m-chlorocarbanilate or isopropyl-N-(3-chorophenyl)carbamate] was included as a structurally-related negative control (non-oncogenic congener) for urethane. Urethane was considered as the "carcinogen" and chlorpropham as the "non-carcinogen" based on studies in mice, rats, hamsters, (IARC Monographs, 1976). Individual records in this section are identified by the report numbers of this International Collaborative Program series as well as by DPR record numbers.

GENE MUTATION

Bacteria:

** 181-023 042331 Report #25 of International Collaborative Program series; MacDonald, D. J., (Institute of Animal Genetics, Scotland, 1979). "Evaluation of short-term tests for carcinogens." *Salmonella* strains TA100, TA98, and TA1537 were tested up to 1000 : g/plate or to limits of cytotoxicity with chlorpropham, 98% purity, in an Ames test. This CDFA (now DPR) review references 16 other chapters using Salmonella and E. coli strains, many with no data but a "+" or "-" for the result. See Evaluation Sheet under this record number for comments on these other studies. This series is judged **acceptable** with **no increase in reversion** rate. Chapter numbers cited in this review and their associated record numbers (in parentheses) are: 21 (042327), 22 (042328), 23 (042329), 24 (042330), 26 (042332), 27 (042333), 28 (042334), 29 (042335), 30 (042336), 31 (042337), 32 (042338), 33 (042339), 34 (042340), 35 (042341), 36 (042342), and 38 (042343). J. Remsen (Gee), 2/21/86.

Mammalian Cells:

181-021 036947 Kirby, P. E., (Microbiological Assoc., 1983) Not part of the International Collaborative Program series. Mouse lymphoma mutagenicity assay. Chlorpropham, lot 237-2778, no purity given, was tested at 0-75 : g/ml with no activation and 0-100 : g/ml with rat liver activation, 4 hour incubation, 48 hour expression time. Marginal effect - S9 but no repeat trial. Unacceptable with a possible adverse effect. Because of positive response in Record No. 042355 with chlorpropham, it is important that the study be confirmed. It is recognized that the mouse lymphoma gives more false positives than CHO, for instance, but based on the evidence presented in the two reports on hand, no conclusion can be reached except potential genotoxicity. J Remsen (Gee), 1/21/86.

** **181-023 042355** Report #53 of International Collaborative Program series;(Jotz, M. M. and A. D. Mitchell, SRI, 1979). "Effects of 20 coded chemicals on the forward mutation frequency at the thymidine kinase locus in L5178Y mouse lymphoma cells." Chlorpropham, 98%, was tested at 0-225 : g/ml minus activation; 0-31.5 : g/ml with rat liver S9 activation. Duplicate cultures. **ACCEPTABLE with possible adverse effects for increased forward mutation frequency**. Response was increased over 2-fold with activation compared with the negative control. [see also Record No. 036947]. J. Remsen (Gee), 2/24/86.

CHROMOSOME EFFECTS

** 181-023 042352 Report #49 of International Collaborative Program series (SRI, 1979). Evans, E. L. and A. D. Mitchell, "Effects of 20 coded chemicals on sister chromatid exchange frequencies in cultured Chinese hamster cells." Chlorpropham, 98%, tested in CHO for SCE's and in rat liver epithelial cells for aberrations. Exposure levels were 0-300 : g/ml for CHO, and up to 60 : g/ml (50% viability) for rat liver cells. **Acceptable with no adverse effect reported**. J. Remsen (Gee), 2/24/86.

181-023 042358 Report #68 of International Collaborative Program series (Sandoz, 1979). Tsuchimoto, T. and B. E. Matter, "Activity of coded compounds in the micronucleus test." Chlorpropham, 98%, two CD-1 mice/sex/group, 0, 35, 70 or 140 mg/kg, dosed i.p. twice at 24-hr interval, and sacrificed 6 hours later. No adverse effect. Incomplete, unacceptable. This protocol is at variance with that in the guidelines. There was an inadequate number of animals per group and there was no evidence that the MTD was reached. J. Remsen (Gee), 2/24/86.

DNA DAMAGE

** 181-023 042322 Report #15 of International Collaborative Program series (Glaxo, 1979). Tweats, D. J., "Activity of 42 coded compounds in a differential killing test using *Escherichia coli* strains WP2, WP67 (uvrA polA), and CM871 (uvrA lexA recA). DNA repair assays. Chlorpropham, 98%, in a series of assays with erratic results, some "+" and some "-". No activity in the presence of S9. Results of this record were considered in conjunction with several other reports of the International Collaborative Program series: (T. Kada, Report #12, Record No. 042319: M. H. L. Green, Report #13, Record No. 042320: D. Ichinotsubo, H. Mower, and M. Mandel, Report #14, Record No. 042321: Rosenkranz, H. S., J. Hyman, and Z. Leifer, Report #16, Record No. 042323: and J. A. Thompson, Report #18, Record No. 042324). Results of these collective studies were erratic and "positives" tended to be marginal. The weight of evidence was taken to be negative overall. **Acceptable: no adverse effect reported**. See Evaluation Worksheet for discussion of several studies. J. Remsen (Gee), 2/21/86.

** 181-023 042344 Report #40 of International Collaborative Program series (Leningrad, 1979). Kassinova, G. V., S. V. Kovaltsova, S. V. Marfin, and I. A. Zakharov, "Activity of 40 coded compounds in differential inhibition and mitotic crossing-over assays in yeast." Saccharomyces mitotic recombination. Chlorpropham was tested up to 333.33 : g/plate with and without activation. **Acceptable with no adverse effect.** J. Remsen (Gee), 2/12/86.

** **181-023 042346** Report #42 of International Collaborative Program series (Univ. College of Swansea, Wales, 1979). Parry, J. M. and D. C. Sharp, "Induction of mitotic aneuploidy in the yeast strain D6 by 42 coded compounds." Chlorpropham, 95%, up to 750 : g/ml with and without activation. Acceptable **with positive adverse effect in mitotic gene conversion in <u>Saccharomyces</u>** strains. **The positive effect was seen in the presence of cytotoxicity.** The reports tend to consider the results as false positives based on notion than the test article is a non-carcinogen. J. Remsen (Gee), 2/21/86.

** 181-023 042351 Report #48 of International Collaborative Program series (Univ. of York, Eng., 1979) Martin, C. N. and A. C. McDermid, "Testing of 42 coded compounds for their ability to induce unscheduled DNA repair synthesis in HeLa cells." Chlorpropham, 98%, in HeLa cells and skin fibroblasts, with and without activation up to 100 : g/ml. No induction of UDS in HeLa and a marginal effect in skin fibroblasts. Consensus of reviewers was a "-". Acceptable with no adverse effect. J. Remsen (Gee), 2/21/86.

181-023 042356 Report #58 of International Collaborative Program series (Huntingdon Res., 1979). Daniel, M. R. and J. M. Dehnel, "Cell transformation test with baby hamster kidney cells." Chlorpropham, 98%, was tested up to the LC50. Incomplete with missing information for evaluation. Despite both reports (see also 42357) being inadequate, the positive response cannot be ignored. Unacceptable **with a positive adverse effect in BHK cells**. J. Remsen (Gee), 2/12/86.

181-023 042357 Report #59 of International Collaborative Program series (Imperial Chemical Industries, Ltd., 1979). Styles, J. A., "Activity of 42 coded compounds in the BHK-21 cell transformation test." This study was cited by J. Remsen (Gee) in review of Record No. 042356 as an inadequate study reporting a positive cell transformation test. No individual worksheet for this study.

ADDITIONAL GENOTOXICITY STUDIES WITHOUT ASSOCIATED DPR WORKSHEETS

181-0023 42325 Report #19 of International Collaborative Program series (University College London, 1979) Fey, E. G., H. A. White, and B. R. Rabin, "Development of the degranulation test system" (assay of ability of the chemical to displace polysomes from rat endoplasmic reticulum). Chlorpropham was among many chemicals testing positive in this assay. No DPR worksheet. Aldous, 6/11/03.

181-0023 42326 Report #20 of International Collaborative Program series (British Industrial Biological Research Association, 1979) Agrelo, C. and H. Amos, "Nuclear enlargement in HeLa cells and fibroblasts." Chlorpropham was among many chemicals testing positive in this assay. No DPR worksheet. Aldous, 6/11/03.

181-0023 42345 Report #41 of International Collaborative Program series (Litton Bionetics, Inc., 1979) Jagannath, D. R., D. M. Vultaggio, and D. J. Brusick, "Genetic activity of 42 coded compounds in the mitotic gene conversion assay using *Saccharomyces cerevisiae* Strain D4." Chlorpropham was negative in this assay. No DPR worksheet. Aldous, 6/11/03.

181-0023 42347 Report #43 of International Collaborative Program series (Institut für Mikrobiologie, Technische Hochschule, Darmstadt, 1979) Zimmermann, F. K., and I. Scheel, "Induction of mitotic gene conversion in strain D7 of *Saccharomyces cerevisiae* by 42 coded chemicals." Chlorpropham was equivocal in this assay. No DPR worksheet. Aldous, 6/11/03.

181-0023 42348 Report #44 of International Collaborative Program series (University College of Swansea, Wales, 1979) Sharp, D. C. and J. M. Parry, "Induction of mitotic gene conversion by 41 coded compounds using the yeast culture JD1." Chlorpropham was associated with a non-significant increase of mitotic gene conversion in this assay. Investigators considered this to represent a "false positive," influenced by the high toxicity of the test article. No DPR worksheet. Aldous, 6/11/03.

181-0023 42349 Report #45 of International Collaborative Program series (University College of Swansea, Wales, 1979) Sharp, D. C. and J. M. Parry, "Use of repair-deficient strains of yeast to assay the activity of 40 coded compounds." Chlorpropham was equivocal (non-significant increase) in this assay. As noted in the preceding report by these investigators, results may have been influenced by the high toxicity of the test article. No DPR worksheet. Aldous, 6/11/03.

181-0023 42350 Report #47 of International Collaborative Program series (British Industrial Biological Research Association, 1979) Agrelo, C. and H. Amos, "DNA repair in human fibroblasts." Chlorpropham was positive in this assay. No DPR worksheet. Aldous, 6/11/03.

181-0023 42353 Report #51 of International Collaborative Program series (Western General Hospital, Edinburgh, Scotland, 1979) Perry, P. E. and E. J. Thomson, "Evaluation of the sister chromatid exchange method in mammalian cells as a screening system for carcinogens." Chlorpropham was negative in this assay. No DPR worksheet. Aldous, 6/11/03.

181-0023 42354 Report #52 of International Collaborative Program series (Shell Toxicity Laboratory, Tunstall, 1979) Dean, B. J., "Activity of 27 coded compounds in the RL_1 chromosome assay." This test assayed chromosome damage on metaphase spreads following exposures of an "epithelial-like" cell line derived from rat liver. Chlorpropham was negative in this assay. No DPR worksheet. Aldous, 6/11/03.

NEUROTOXICITY

Not required at this time.

MISCELLANEOUS (Including IBT studies)

181-004 919923 "90-day subacute oral toxicity study of PPG-124 in albino rats" IBT study No. B8261. U. S. EPA validation status: not listed. No remarkable effects noted by investigators. No DPR review. Aldous, 6/10/03.

181-004 919924 "Ninety-day subacute oral toxicity study of PPG-124 (p-chlorophenyl-N-methylcarbamate) in beagle dogs" IBT study No. B8262. U. S. EPA validation status: invalid. No DPR review. Aldous, 6/10/03.